IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application of

Applicant	: John D. Tanner et al.
Serial No.	: 10/643,669
Filed	: August 19, 2003
Title	: WATER FILTER DEVICE
Docket No.	: 9346
Examiner	: Kim, Sun U
Art Unit	: 1797
Conf. No.	: 5756

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Commissioner for Patents
P.O. Box 1450
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Sir:

BRIEF ON APPEAL

This is an appeal from the Office Action mailed October 8, 2008, rejecting claims 1, 3-19, 23, and 25-28, all of the claims in the application. On January 7, 2009, a Notice of Appeal with the accompanying fee was filed via facsimile. A request for a one-month extension of time in which to file this Brief on Appeal accompanies this paper. Therefore, in accordance with 37 CFR §41.37 an appeal brief is being timely filed herewith. A Credit Card Payment in the amount of $130.00 (extension fee under 37 CFR §1.136) and $540.00 (filing a brief in support of an appeal) accompanies this Brief on Appeal in accordance with 37 CFR §41.20(b)(2).

I. Real Party in Interest

The real party in interest in this application is Pur Water Purification Products, Inc., by an assignment recorded in the files of the U.S. Patent and Trademark Office on March 27, 2006 under Reel 017378 and Frame 0487.

II. Related Appeals and Interferences

Applicants know of currently pending related appeals in Application Serial Nos. 10/705,572 and 10/705,174, which were both filed on April 7, 2009; however, no decisions have been rendered yet by the Board.

III. Status of Claims

Claims 1, 3-19, 23 and 25-28 are pending in this application. Claims 2, 20-22, 24 and 29-50 were previously canceled without prejudice. Claims 1, 3-19, 23, and 25-28 stand finally rejected and are before the Board for consideration on appeal. A copy of the appealed claims is found in the Appendix attached to this brief.

IV. Status of Amendments

All of the amendments previously filed in this application have been entered.

V. Summary of Claimed Subject Matter

The following is a concise explanation of the subject matter defined in each of the independent claims and each of the dependent claims argued separately. Reference to the drawing figures and specifically depicted embodiments of the invention are for the convenience of the Board and are not to be interpreted as limitations on the claims.

Claim 1

Independent claim 1 is directed to a water filter device 20 for treating untreated drinking water as described in the application and figures, for example, Fig. 1. Further as shown in Fig. 1, the water filter device 20 comprises a connector 22 (*see* also Figs. 2A and 3B) for providing fluid communication between the water filter device 20 and an untreated drinking water source (e.g., a residential-type water faucet, in-line under a sink, a roof-mounted tank, etc). Various components and embodiments of the connector 22 are described in the specification and further on page 10, lines 20-30, and page 11, lines 1-8.

Referring again to Fig. 1, the water filter device 20 of independent claim 1 further comprises a low-pressure water filter 26 in fluid communication with said connector 22 for

treating untreated drinking water (Page 3, lines 16-17). The specification defines "low-pressure" as from about 1 pound per square inch (herein, "psi") to about 20 psi, and the specification further defines "low-pressure water filter" as a water filter which delivers from about 5 milliliters/minute (herein "mL/min") to about 400 mL/min of treated drinking water when the source of untreated drinking water is at a pressure of at least about 1 psi (Page 7, lines 12-17).

Claim 1 further recites that the water filter 26 includes water filter material comprising filter particles consisting of mesoporous activated carbon, wherein the water filter has a Filter Bacteria Log Removal of greater than about 2 logs (Page 13, line 19). As described in the specification, "mesoporous activated carbon filter particle" refers to an activated carbon filter particle wherein the sum of the mesopore and macropore volumes may be greater than 0.12 milliliters/gram (herein "mL/g") (Page 7, lines 26-28). The phrase "Filter Bacteria Log Removal (F-BLR)" refers to the bacteria removal capability of the filter after the flow of the first 2,000 filter material pore volumes (Page 6, lines 6-9). The F-BLR is defined and calculated as: F-BLR=-log [(effluent concentration of E. coli)/(influent concentration of E. coli)], where the "influent concentration of E. coli" is set to about $1X10^8$ CFU/L continuously throughout the test and the "effluent concentration of E. coli" is measured after about 2,000 filter material pore volumes flow through the filter. F-BLR has units of "log" (where "log" is the logarithm) (Page 6, lines 9-16).

Reciting a specific embodiment of the mesoporous activated carbon filter particles, claim 1 further recites that the sum of the mesopore and macropore volumes of said filter particles is between about 0.2 mL/g and about 2 mL/g (*See* Claim 15, abandoned U.S. Application No. 09/935,962 incorporated by reference in the present application herein at page 1, lines 16-17); wherein mesopore means an intra-particle pore having a diameter between 2 nm and 50nm (Present application, Page 7, lines 20-22), and macropore means an intra-particle pore having a diameter greater than 50nm (Page 7, lines 18-19). As defined in the specification, the "sum of the mesopore and macropore volumes" is equal to the difference between the total pore volume and the micropore volume (Page 8, line 30 - Page 9, lines 1-3). A "micropore" refers to an intra-particle pore having a width or diameter less than 20 angstroms (Page 8, lines 12-13). Consolidating the definitional components, mesoporous activated carbon particles requires a water filter having a blend of macropores, mesopores, and micropores.

Furthermore, claim 1 also recites that the total pore volume of said filter particles is greater than about 0.4 mL/g and less than about 3mL/g (Page 14, first paragraph, International Application No. PCT/US03/05416 incorporated by reference in the present application herein at page 1, lines 26-28), and that the ratio of the sum of mesopore and macropore volumes to the total pore volume of said filter particles is greater than about 0.3 (*Id.* at Page 15, first full paragraph).

Referring again to Fig. 3, the water filter device 20 also comprises a storage housing 30 in fluid communication with said low-pressure water filter 26 (Fig. 3; Page 3, lines 18-20). The storage housing 30 stores treated drinking water treated by said water filter (Page 10, lines 4-13 and Page 17, lines 15-30, and Page 18, lines 1-15 of the present application). The water filter device 20 also comprises an automatic shutoff valve 92 in fluid communication with said storage housing 30, wherein the automatic shutoff valve 92 is configured for arresting the flow of treated drinking water into said storage housing 30 (Fig. 7; Page 3, lines 20-21; Page 18, lines 24-25, and Page 19, lines 1-24). Additionally, the water filter device 20 comprises a dispenser 36 in fluid communication with the storage housing 30, wherein the dispenser 36 is configured for dispensing treated drinking water from the storage housing 30 (Page 10, line 10 and Page 19, lines 25-30).

Furthermore, claim 1 also recites that the treated drinking water enters into the storage housing at the rate of at least about 5 mL/min but not greater than about 2,000 mL/min until activating said automatic shutoff valve, such that the flow of treated drinking water into said storage housing is arrested (Page 3, lines 21-26). Moreover claim 1 recites that the water filter device is a non-electric water filter device (Page 3, lines 25-26). Finally, claim 1 recites that the water filter device is operable to remove microorganisms from the untreated drinking water flowing into said connector 22 and out of said low-pressure water filter 26 (Fig. 1; page 24, lines 18-24).

Claim 3

Claim 3 depends from claim 1 and recites that the mesoporous activated carbon particles comprise mesoporous and basic activated carbon particles (Page 7, lines 29-30 and Page 8, lines 1-2).

Claim 4

Claim 4 depends from claim 1 and recites that the mesoporous activated carbon particles comprise mesoporous, basic, and reduced-oxygen activated carbon particles (Page 8, lines 3-7).

Claim 5

Claim 5 depends from claim 1 and recites that the water filter comprises a Filter Viruses Log Removal of greater than about 1 log (Page 13, lines 19-21).

Claim 6

Claim 6 depends from claim 5 and recites that the water filter comprises a Filter Bacteria Log Removal of greater than about 4 logs and a Filter Viruses Log Removal of greater than about 2 logs (Page 13, lines 19-22).

Claim 7

Claim 7 depends from claim 6 and recites that the water filter comprises a Filter Bacteria Log Removal of greater than about 6 logs and a Filter Viruses Log Removal of greater than about 4 logs (Page 13, lines 19-22).

Claim 8

Claim 8 depends from claim 1 and recites that the automatic shutoff valve 92 comprises a float 98 (Fig. 7; Page 19, lines 3-4).

Claim 9

Claim 9 depends from claim 1 and recites that the water filter device 20 further comprises a flow regulator 39 as shown in Fig. 5. The flow regulator 39 regulates the flow of the untreated drinking water such that the average fluid contact time is greater than about 2 seconds up to about 120 psi (Fig. 5; Page 10, lines 11-13 and claim 9 as originally filed).

Claim 10

Claim 10 depends from claim 1 and recites that the water filter device 20 further comprises a flow regulator 39 as shown in Fig. 5, wherein said flow regulator 39 regulates the flow of the untreated drinking water such that the average fluid contact time is greater than about 4 seconds up to about 120 psi (Fig. 5; Page 10, lines 11-13 and claim 10 as originally filed).

Claim 11

Claim 11 depends from claim 1 and recites that the water filter device 20 further comprises a threadably attachable filter vessel 28 for containing said water filter 26, wherein the filter vessel 28 may be opened with from about 5 inch-lbs to about 100 inch-lbs of torque (Fig. 1; Page 14, lines 25-30 and Page 15, lines 1-5).

Claim 12

Claim 12 depends from claim 1 and recites that the water filter device 20 further comprises a filter vessel 28 for containing said water filter 26, wherein at least a portion of said filter vessel 28 is oriented on a front or side portion of said water filter device 20 (Figs. 1 and 4; Page 15, lines 16-21).

Claim 13

Claim 13 depends from claim 1 and recites that the water filter device 20 further comprises a filter vessel 28 for containing the water filter 26, wherein the height of the filter vessel 28 is less than about 75 % the height of the water filter device 20 (Figs. 1 and 4; Page 15, lines 16-21).

Claim 14

Claim 14 depends from claim 1 and recites that the storage housing 30 may be separably removed from the water filter device 20 (Page 17, lines 28-29).

Claim 15

Claim 15 depends from claim 1 and recites that the storage housing 30 comprises a window 88 for viewing the volume of treated drinking water contained within the storage housing 30 (Fig. 1; Page 17, lines 24-25).

Claim 16

Claim 16 depends from claim 1 and recites that the water filter device 20 further comprises a means of indicating the life of the water filter. One such means, the life display 40, is shown in Fig. 1 and discussed on page 21, lines 1-11.

Claim 17

Claim 17 depends from claim 1 and recites that the water filter 26 further comprises a pre-filter 120 as shown in Fig. 3, wherein the pre-filter 120 is selected from the group consisting of melt-blown polypropylene, non-woven polymer, micro-glass fiber, and non-woven cellulose filter material (Fig. 3; Page 13, lines 16-18).

Claim 18

Claim 18 depends from claim 1 and recites that the storage housing has an interior volume from about 500 mL to about 2,000 mL (Page 18, lines 11-12).

Claim 19

Claim 19 depends from claim 1 and recites that the water filter device 20 further comprises a filter vessel 28 in fluid communication with said connector 22, wherein the filter vessel 28 contains the water filter 26 (Fig. 1). Claim 19 further recites that approximately 100 % of the untreated drinking water that enters said water filter device 20 via said connecter 22 is treated by said water filter 26, and wherein at least a portion of said filter vessel 28 releasably attaches to a front or side portion of said water filter device 20 (Figs. 1 and 3; Page 13, lines 3-5)

Claim 23

Claim 23 depends from claim 19 and recites that the untreated drinking water radially enters and radially flows through said water filter material (Figs. 1 and 3; Page 24, lines 20-24).

Claim 25

Claim 25 depends from claim 19 and recites that the filter vessel 28 may be opened with from about 5 inch-lbs to about 100 inch-lbs of torque (Fig. 1; Page 14, lines 25-30 and Page15, lines 1-5).

Claim 26

Claim 26 depends from claim 19 and recites that the storage housing 30 may be separably removed from said water filter device 20 (Page 17, lines 28-29).

Claim 27

Claim 27 depends from claim 19 and recites that the water filter 26 further comprises a pre-filter 120 as shown in Fig. 3, wherein the pre-filter 120 is selected from the group consisting of melt-blown polypropylene, non-woven polymer, micro-glass fiber, and non-woven cellulose filter material (Fig. 3; Page 13, lines 16-18).

Claim 28

Claim 28 depends from claim 19 and recites that the filter vessel may be released from said water filter device using a button (Page 15, lines 6-7).

VI. Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection for review on appeal are:

(1) Claims 1, 3, 5-7, 12-14, 16-17, 19 and 26-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277);

(2) Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al.. (US 5,131,277) as applied to claim 1, and further in view of Sipos et al.. (US 5,371,221);

(3) Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Baerg et al. (US 3,670,892);

(4) Claims 9-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claims 1 and 19, and further in view of Deines et al. (US 4,147,631) and Renn (US 3,268,444);

(5) Claims 11 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claims 1 and 19, and further in view of Deines et al. (US 4,147,631) and Scavuzzo et al. (US 3,333,703);

(6) Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Kuh et al. (US 4,681,677);

(7) Claim 18 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Cranshaw et al. (US 6,117,319);

(8) Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1[1], and further in view of Coates et al. (US 5,707,518);

(9) Claim 28 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and

[1] The Office Action states "as applied to claim 19" instead of claim 1. We assume this was merely a typographical error, thus our analysis assumes the rejection intended to reference claim 1.

Birdsong et al. (US 5,131,277) as applied to claim 1[2], and further in view of Wadsworth et al. (US 6,123,837).

VII. Argument

Appellants submit that the water filter device defined by independent claim 1 and claims 3-19, 23 and 25-28 dependent thereon are nonobvious over and patentably distinguishable from the references cited by the Examiner. Accordingly, the rejections under 35 U.S.C. §103(a) should be reversed, and favorable action by the Board is respectfully requested.

In general, to establish a prima facie case of obviousness, the Examiner must show, by reasoning or evidence, one or more of the following rationales: (A) Combining prior art elements according to known methods to yield predictable results; (B) Simple substitution of one known element for another to obtain predictable results; (C) Use of known technique to improve similar devices (methods, or products) in the same way; (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (E) "Obvious to try" - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; or (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. See MPEP §2143 and *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 167 L.Ed.2d 705, 82 USPQ2d 1385 (2007). The Examiner has failed to establish any of the rationales set forth above to support the conclusion of obviousness.

A rejection based on §103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art. *In re Warner*, 154 USPQ 173, 178 (CCPA 1967). The Examiner may *not*, because he may doubt that the invention is patentable, resort to speculation, unfounded assumptions, or hindsight reconstruction to supply deficiencies in his required factual basis. *Id.*

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[2] Same comment as footnote 1 set forth above.

(1) Rejection of claims 1, 3, 5-7, 12-14, 16-17, 19 and 26-27 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277)

a) Claim 1 as representative of claims 3, 5-7, 12-14, 16-17, 19 and 26-27

In the final Office Action of October 8, 2008, the Examiner asserted that independent claim 1 and claims 3, 5-7, 12-14, 16-17, 19 and 26-27 dependent thereon were obvious under §103(a) over Clack in view of Cannon, Hill and Birdsong; however, the Examiner's assertions are erroneous because none of the references, either singularly or in combination, teach or suggest all elements of claim 1 and all claims dependent thereon.

Referring to Fig. 1, Clack is directed to a reverse osmosis filtration purification system, which includes an incoming tap line 28 (cited for teaching the claimed connector), a tap water source 12 (cited for teaching the untreated drinking water source), a first reverse osmosis filter module 20 (cited for teaching the low-pressure water filter), a storage tank assembly 24 (cited for teaching the storage housing), an automatic shut-off valve 18, and a water dispense assembly 26 (cited as teaching the dispenser).

The Examiner errs because Clack fails to teach a low pressure water filter as recited in claim 1. As stated above, "low-pressure" means that the filter of claim 1 operates between 1 and 20 psi (Col. 7, lines 12-17). In contrast, Clack teaches that incoming tap water is delivered at **line pressure** into the reverse osmosis filter module 20 (Col. 1, lines 45-46; Col. 3, lines 42-44; and Col. 4, lines 62-66). Clack fails to provide a definition or a range associated with the term "line pressure," thus the ordinary meaning of the ambiguous term should be considered. According to Beall Jr. et al. 4,885,085, which predates Clack, "line pressure" for reverse osmosis filters may vary between 60 psi to 100 psi (Col. 7, lines 26-39). In view of Beall Jr., one of ordinary skill in the art would consider the filter module of Clack to be a higher pressure filter device which operates at 60-100 psi, not a low-pressure filter operable between 1 and 20 psi as recited in claim 1. As a result, Clack fails to teach a low-pressure water filter as recited in claim 1.

In addition to failing to teach a low-pressure water filter as recited in claim 1, Clack teaches away from low-pressure water filters as claimed by emphasizing that line pressure is essential for the function of the Clack system. For example, Clack discloses that:

> [t]he incoming water from the sediment filter 16 at substantially line pressure fills the lower valve chamber 202 and **exerts an upward force** on the free floating piston member 224 which keeps the lower diaphragm 218 off the valve seat 200 permitting the pre-filter outlet water to flow through the lower valve chamber 202 through opening 204 and passage 206 to other filter modules in the filter assembly (Col. 9, lines 52-59, emphasis added).

In short, the Clack system requires line pressure to force fluid flow to other filter modules and suggests that any pressure less than line pressure, i.e., low-pressure (e.g., pressure between 1-20 psi), could not achieve the requisite force. Consequently, Clack not only fails to teach a low-pressure water filter as recited in claim 1, but Clack also teaches away from using low-pressure water filters in its filter system.

As the Examiner acknowledges, Clack fails to teach, *inter alia*, mesoporous activated carbon. Noting these deficiencies, the Examiner consults the teachings of Cannon. Cannon teaches a column having an inlet and an outlet and a filter material disposed in the column comprising a plurality of mesoporous activated carbon filter particles loaded with a cationic polymer. Cannon provides no teaching or suggestion of a low-pressure water filter. Moreover, Cannon provides no teachings of macropores. As defined in the specification, the "sum of the mesopore and macropore volumes" is equal to the difference between the total pore volume and the micropore volume (Page 8, line 30 - Page 9, lines 1-3). Thus, as defined by the specification, mesoporous activated carbon particles requires a water filter having a blend of macropores, mesopores, and micropores. Cannon provides teachings regarding mesopore volume and micropore volume (Col. 8, lines 4-8; Col. 9, lines 29-32); however, Cannon provides no teaching of macropores as required in claim 1. By failing to teach macropores, Cannon consequently also fails to teach that the sum of the mesopore and macropore volumes of said filter particles is between about 0.2 mL/g and about 2 mL/g, wherein mesopore means an intra-particle pore having a diameter between 2 nm and 50nm, and macropore means an intra-particle pore having a diameter greater than 50nm as required in claim 1.

The Examiner acknowledges that Cannon fails to teach that the sum of the mesopore and macropore volumes of said filter particles is between about 0.2 mL/g and about 2 mL/g; however, the Examiner asserts this is inherent in view of Cannon's alleged disclosure of "mesoporosity." To establish a prima facie case of obviousness based on inherency, the prior art products must be identical or substantially identical to the claimed structure. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). As stated above, Cannon fails to teach a filter particle comprising macropores. By failing to include this structural component, the Cannon activated carbon structure is not identical or substantially identical to the claimed activated carbons structure, thus the Examiner has failed to establish a prima facie case of obviousness based on inherency. Absent an impermissible hindsight reconstruction of the present disclosure and claims, it stands to reason that Cannon cannot inherently teach that that the sum of the mesopore and macropore volumes of said filter particles is between about 0.2 mL/g and about 2 mL/g, when Cannon does not minimally teach macropores.

Additionally as the Examiner acknowledges, Cannon does not teach that its water filter is operable for removal of viruses or bacteria, much less a Filter Bacteria Log Removal of greater than about 2 logs as recited in claim 1. Noting this deficiency, the Examiner consults the teachings of Hill; however, Hill fails to cure the above noted deficiencies of Cannon and Clack. Hill is silent regarding low-pressure water filters as claimed. Additionally, Hill discloses a method comprising stirring a suspension of activated carbon in water by "giv[ing] the body of liquid in the settling vessel a slow rotational movement, say, of the order of one or two turns per hour" (col. 2, lines 98-100). Although Hill states that carbon, while lacking bactericidal properties, is able to remove bacteria (col. 2, lines 56-58), Hill emphasizes that the difficulty in freeing water of added carbon makes the use of carbon impractical (col. 2, lines 60-73). Hill attempts to address this impracticality with the disclosed stirring technique; however, if anything Hill suggests NOT using activated carbon for bacteria removal. As a result, Hill fails to generally teach that activated carbon water filters may be used for virus and bacteria removal, and also specifically fails to teach a water filter comprising a Filter Bacteria Log Removal of greater than about 2 logs as recited in claim 1.

The Examiner acknowledges that the combination of Clack, Cannon, and Hill fails to teach the claimed Filter Bacterial Log Removal (F-BLR) of greater than about 2 logs as recited

in claim 1 (or the F-BLR and/or Filter Virus Log Removal (F-VLR) ranges of claims 5-7). However, the Examiner states that these properties would be inherent based on Cannon's teachings of mesopores. As shown above, Cannon fails to teach macropores or that the sum of the mesopore and macropore volumes of said filter particles is between about 0.2 mL/g and about 2 mL/g and thus fails to teach filter particles consisting of mesoporous activated carbon as recited in claim 1. Moreover as shown above, Clack, Cannon, and Hill fail to teach low-pressure filters. Based on the differences between the prior art structure and the claimed structure (i.e., no prior art teachings of macropores or low-pressure filters), the structures are not identical, thus there has been no establishment of a prima facie case of obviousness case based on inherency. Additionally, one of ordinary skill in the art would not expect a line pressure filter operating at 60-100 psi (as in Clack) with a filter material lacking macropores to yield the same properties as a low-pressure water filter comprising activated carbon particles with micropores, mesopores, and macropores. Fundamentally, the filter material and structure used and the operating conditions (e.g., pressure) greatly impact the degree of removal (e.g., the F-BLR or F-VLR) achieved, thus a water filter comprising a Filter Bacteria Log Removal of greater than about 2 logs as recited in claim 1 is not inherent in view of the combination of Clack, Cannon, and Hill. For the same reasons, the F-BLR and/or F-VLR ranges recited in claims 5-7 are also not taught by the combination of Clack, Cannon, and Hill.

Birdsong, which is narrowly cited for teaching a flow rate of 40 to 300 mL/min, fails to cure the above noted deficiencies of Clack, Cannon, and Hill. Birdsong fails to teach a low-pressure water filter, or activated carbon filters comprising macropores. As a result, the rejection of claim 1 and all claims dependent thereon under §103(a) over Clack in view of Cannon, Hill, and Birdsong is believed to be traversed and reconsideration is respectfully requested.

Moreover, Applicants submit that they have surprisingly found that mesoporous activated carbon, as claimed, is useful in the removal of bacteria and viruses from water. Applicants demonstrate this, e.g., in the results shown in Figures 7a and 7b, where the performance of a filter according to the invention (mesoporous RGC) is compared to that of a conventional filter (microporous coconut). As can be seen in Fig. 7a, the inventive filter is effective in removing E. coli for about 240 L of cumulative water volume, whereas the conventional filter fails at less than 40 L. As can be seen in Fig. 7b, the inventive filter is effective in removing MS-2 for about

80 to 100 L of cumulative water volume, whereas the conventional filter fails at loss than 20 L. As the Supreme Court stated in *KSR International Co. v. Teleflex Inc.*, the fact that elements work together in an unexpected and fruitful manner supports the conclusion that a combination is not obvious to those skilled in the art.. 127 S. Ct. 1727, 82 U.S.P.Q. 2d 1385 (2007). Due to the unexpected results achieved by the claimed water filter device of claim 1, Applicants further assert that the claimed water filter device is nonobvious over the cited references.

b) Claims 17 and 27

In addition to the above noted deficiencies, none of the cited references (Clack, Cannon, Hill, or Birdsong), either singularly or in combination, teach or suggest a pre-filter selected from the group consisting of melt-blown polypropylene, non-woven polymer, micro-glass fiber, and non-woven cellulose filter material as recited in claims 17 and 27.

Clack teaches a sediment pre-filter comprising granulated activated carbon for removal of chlorine and particulate solids (Page 4, lines 56-59). The Examiner acknowledges that Clack's disclosure of activated carbon pre-filter fails to teach or suggest a pre-filter melt-blown polypropylene, non-woven polymer, micro-glass fiber, and non-woven cellulose filter material as recited in claim 17, thus the Examiner consults the teachings of Birdsong to cure this deficiency. Birdsong teaches a wound polypropylene fiber sediment pre-filter for removing only dirt particles (Page 5, lines 24-27). In contrast to the activated carbon filter of Clack, which can remove particulates and chlorine, polypropylene is an inert material, which can only remove particulates or dirt particles. If the Clack system was modified to substitute the wound polypropylene fiber pre-filter of Birdsong for the activated carbon pre-filter used in Clack, Clack would be rendered inoperable for its intended purpose, because the Birdsong pre-filter fails to remove chlorine. "If a proposed modification renders the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion to make the proposed modification." *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Here, the Clack system requires the removal of chlorine upstream of the filter module via the activated carbon pre-filter. Substituting the Birdsong wound polypropylene pre-filter renders the removal of chlorine in the Clack system inoperable, thus there is no suggestion to make the Examiner's proposed modification. As a result, the rejection of claims 17 and 27 under §103(a) over Clack in

view of Cannon, Hill, and Birdsong is believed to be traversed and reconsideration is respectfully requested.

(2) Rejection of claim 4 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Sipos et al. (US 5,371,221)

In addition to the above noted deficiencies, none of the cited references (Clack, Cannon, Hill, or Birdsong), either singularly or in combination, teach or suggest mesoporous activated carbon particles comprising mesoporous, basic, and reduced-oxygen activated carbon particles as recited in claim 4. Noting this deficiency, the Examiner cites the teachings of Sipos.

Unlike the other cited references, Sipos is not directed to filtering water. Sipos is directed to a process for recovering caffeine from activated carbon (Col. 1, lines 5-6). Specifically, Sipos teaches the elimination of the air/oxygen content of the activated carbon with a sweeping gas stream, and subsequent preheating to a temperature within the range of 250° to 460°C (Col. 2, lines 9-14). Before this "preheating" step, Sipos states that another heating step from 200-250°C is carried out without concern for removal of oxygen in order to "reduce the overall heat input needed later to **preheat the carbon evenly to a sublimation temperature**" (Col. 2, lines 36-39 and 43-46, *emphasis added*). The Examiner states that one of ordinary skill in the art would consult Sipos, which is directed to caffeine recovery not water filtering, because it teaches a step of reducing the heat input required for sublimation (Col. 2, lines 43-46). As would be familiar to one of ordinary skill in the art, sublimation is a transition from the solid to gas phase. There is no teaching in Clack, Cannon, Hill, or Birdsong that the activated carbon undergoes a step which converts the activated carbon particles to a gaseous phase, nor is there any suggestion of the desirability of sublimating the activated carbon particles. As Sipos is merely concerned with caffeine recovery from the activated carbon, Sipos is not concerned with the negative impact sublimation may have on the filtering efficacy of the activated carbon. In essence, the Examiner's motivation for consulting Sipos, reducing the heat input required for sublimation, is completely irrelevant as sublimation of the activated filter material is not desirable for the filter material of the other cited references (Clack, Cannon, Hill, or Birdsong). "The mere fact that prior art may be modified in the manner suggested by the Examiner does not make the modification obvious

unless the prior art suggested the desirability of the modification. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 23 USPQ2d 1780, 1783-4 (Fed. Cir. 1991). As a result, the rejection of claim 4 under §103(a) over Clack in view of Cannon, Hill, Birdsong, and Sipos is believed to be traversed and reconsideration is respectfully requested.

(3) Rejection of claim 8 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Baerg et al. (US 3,670,892)

Regarding the rejection of claim 8, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of these references are not remedied by the teachings of Baerg which is narrowly cited for teaching a float on the automatic shutoff valve. As a result, the rejection of claim 8 under §103(a) over Clack in view of Cannon, Hill, Birdsong, and Baerg is believed to be traversed and reconsideration is respectfully requested.

(4) Rejection of claims 9 and 10 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claims 1 and 19, and further in view of Deines et al. (US 4,147,631) and Renn (US 3,268,444)

Regarding the rejection of claims 9 and 10, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of these references are not remedied by the teachings of Deines or Renn. Deines is narrowly cited for teaching a flow regulator with an incoming water pressure of 30-40 psi; however, Deines fails to cure the above noted deficiencies of Clack, Cannon, Hill, and Birdsong, for example, a low-pressure water filter operating at 1-20 psi as recited in claim 1. Similarly, Renn is narrowly cited for teaching a fluid contact time of 15 seconds; however, Renn

fails to cure the above noted deficiencies of Clack, Cannon, Hill, and Birdsong. As a result, the rejection of claims 9 and 10 under §103(a) over Clack in view of Cannon, Hill, Birdsong, Deines, and Renn is believed to be traversed and reconsideration is respectfully requested.

(5) Rejection of claims 11 and 25 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claims 1 and 19, and further in view of Deines et al. (US 4,147,631) and Scavuzzo et al. (US 3,333,703)

Regarding the rejection of claims 11 and 25, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of the these references are not remedied by the teachings of Deines or Scavuzzo, which are cited for teaching filter caps or covers, respectively. As a result, the rejection of claims 11 and 25 under §103(a) over Clack in view of Cannon, Hill, Birdsong, Deines, and Scavuzzo is believed to be traversed and reconsideration is respectfully requested.

(6) Rejection of claim 15 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Kuh et al. (US 4,681,677)

Regarding the rejection of claim 15, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of the these references are not remedied by the teachings of Kuh, which is narrowly cited for teaching a water meter unit comprising a watertight casing and window therewith (Col, 4, lines 64 - Col. 5 line 4). As a result, the rejection of claim 15 under §103(a) over Clack in view of Cannon, Hill, Birdsong, and Kuh is believed to be traversed and reconsideration is respectfully requested.

(7) Rejection of claim 18 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Cranshaw et al. (US 6,117,319)

Regarding the rejection of claim 18, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of the these references are not remedied by the teachings of Cranshaw, which is narrowly cited for teaching a fluid storage housing comprising a capacity of between about 500 mL to 3 L (Col. 4, lines 1-2). As a result, the rejection of claim 18 under §103(a) over Clack in view of Cannon, Hill, Birdsong, and Cranshaw is believed to be traversed and reconsideration is respectfully requested.

(8) Rejection of claim 23 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Coates et al. (US 5,707,518)

Regarding the rejection of claim 23, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of these references are not remedied by the teachings of Coates which is narrowly cited for teaching radial flow into a filter. As a result, the rejection of claim 23 under §103(a) over Clack in view of Cannon, Hill, Birdsong, and Coates is believed to be traversed and reconsideration is respectfully requested.

(9) Rejection of claim 28 under 35 U.S.C. § 103(a) over Clack (US 4,997,553) in view of Cannon et al. (US 6,881,348), Hill (US 1,782,850) and Birdsong et al. (US 5,131,277) as applied to claim 1, and further in view of Wadsworth et al. (US 6,123,837)

Regarding the rejection of claim 28, Applicants renew their arguments as provided above regarding the rejection of claim 1 under §103(a) over Clack in view of Cannon, Hill, and Birdsong. The deficiencies of these references are not remedied by the teachings of Wadsworth

which is narrowly cited for teaching a latch release button for a filter. As a result, the rejection of claim 28 under §103(a) over Clack in view of Cannon, Hill, Birdsong, and Wadsworth is believed to be traversed and reconsideration is respectfully requested.

Conclusion

Applicants respectfully submit that there are clear errors in the rejections to claims 1, 3-19, 23, and 25-28 maintained from the previous final Office Action dated October 8, 2008, and that essential elements to establish a *prima facie* case of obviousness have not been met. In particular, as discussed in detail above, the cited references do not disclose all the limitations in the rejected claims.

Therefore, it is submitted that the claims pending in the instant application are allowable. The Board is respectfully requested to reverse all the rejections made by the Examiner in their entirety.

Respectfully submitted,

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VIII. Claims Appendix

1. A water filter device for treating untreated drinking water, said water filter device comprising:

(a) a connector for providing fluid communication between said water filter device and an untreated drinking water source;

(b) a low-pressure water filter in fluid communication with said connector, said low-pressure water filter for treating untreated drinking water, said water filter comprising a water filter material, said water filter material comprising filter particles consisting of mesoporous activated carbon, and said water filter having a Filter Bacteria Log Removal of greater than about 2 logs, wherein:

(i) the sum of the mesopore and macropore volumes of said filter particles is between about 0.2 mL/g and about 2 mL/g; wherein mesopore means an intra-particle pore having a diameter between 2 nm and 50nm, and macropore means an intra-particle pore having a diameter greater than 50nm;

(ii) the total pore volume of said filter particles is greater than about 0.4 mL/g and less than about 3mL/g; and

(iii) the ratio of the sum of mesopore and macropore volumes to the total pore volume of said filter particles is greater than about 0.3;

(c) a storage housing in fluid communication with said low-pressure water filter, said storage housing for storing treated drinking water treated by said water filter;

(d) an automatic shutoff valve in fluid communication with said storage housing, said automatic shutoff valve for arresting the flow of treated drinking water into said storage housing; and

(e) a dispenser in fluid communication with said storage housing, said dispenser for dispensing treated drinking water from said storage housing;

wherein the treated drinking enters into said storage housing at the rate of at least about 5 mL/min but not greater than about 2,000 mL/min until activating said automatic shutoff valve, such that the flow of treated drinking water into said storage housing is arrested, wherein said water filter device is a non-electric water filter device, and wherein said water filter device is operable to remove microorganisms from said untreated drinking water flowing into said connector and out of said low-pressure water filter.

3. The water filter device of claim 1, wherein said mesoporous activated carbon particles comprise mesoporous and basic activated carbon particles.

4. The water filter device of claim 1, wherein said mesoporous activated carbon particles comprise mesoporous, basic, and reduced-oxygen activated carbon particles.

5. The water filter device of claim 1, wherein said water filter comprises a Filter Viruses Log Removal of greater than about 1 log.

6. The water filter device of claim 5, wherein said water filter comprises a Filter Bacteria Log Removal of greater than about 4 logs and a Filter Viruses Log Removal of greater than about 2 logs.

7. The water filter device of claim 6, wherein said water filter comprises a Filter Bacteria Log Removal of greater than about 6 logs and a Filter Viruses Log Removal of greater than about 4 logs.

8. The water filter device of claim 1, wherein said automatic shutoff valve comprises a float.

9. The water filter device of claim 1, wherein said water filter device further comprises a flow regulator, wherein said flow regulator regulates the flow of the untreated drinking water such that the average fluid contact time is greater than about 2 seconds up to about 120 psi.

10. The water filter device of claim 1, wherein said water filter device further comprises a flow regulator, wherein said flow regulator regulates the flow of the untreated drinking water such that the average fluid contact time is greater than about 4 seconds up to about 120 psi.

11. The water filter device of claim 1, wherein said water filter device further comprises a threadably attachable filter vessel for containing said water filter, wherein said filter vessel may be opened with from about 5 inch-lbs to about 100 inch-lbs of torque.

12. The water filter device of claim 1, wherein said water filter device further comprises a filter vessel for containing said water filter, wherein at least a portion of said filter vessel is oriented on a front or side portion of said water filter device.

13. The water filter device of claim 1, wherein said water filter device further comprises a filter vessel for containing said water filter, wherein the height of said filter vessel is less than about 75 % the height of the water filter device.

14. The water filter device of claim 1, wherein said storage housing may be separably removed from said water filter device.

15. The water filter device of claim 1, wherein said storage housing comprises a window for viewing the volume of treated drinking water contained within said storage housing.

16. The water filter device of claim 1, wherein said water filter device further comprises a means of indicating the life of the water filter.

17. The water filter device of claim 1, wherein said water filter further comprises a pre-filter, wherein said pre-filter is selected from the group consisting of melt-blown polypropylene, non-woven polymer, micro-glass fiber, and non-woven cellulose filter material.

18. The water filter device of claim 1, wherein said storage housing has an interior volume from about 500 mL to about 2,000 mL.

19. The water filter device of claim 1, wherein said water filter device further comprises a filter vessel in fluid communication with said connector, said filter vessel for containing said water filter; wherein approximately 100 % of the untreated drinking water that enters said water filter device via said connecter is treated by said water filter, and wherein at least a portion of said filter vessel releasably attaches to a front or side portion of said water filter device.

23. The water filter device of claim 19, wherein the untreated drinking water radially enters and radially flows through said water filter material.

25. The water filter device of claim 19, wherein said filter vessel may be opened with from about 5 inch-lbs to about 100 inch-lbs of torque.

26. The water filter device of claim 19, wherein said storage housing may be separably removed from said water filter device.

27. The water filter device of claim 19, wherein said water filter further comprises a pre-filter, and said pre-filter is selected from the group consisting of melt-blown polypropylene, non-woven polymer, micro-glass fiber, and non-woven cellulose filter material.

28. The water filter device of claim 19, wherein said filter vessel may be released from said water filter device using a button.

IX. Evidence Appendix

None

X. Related Proceedings Appendix

Applicants know of currently pending related appeals in Application Serial Nos. 10/705,572 and 10/705,174, which were filed on April 7, 2009; however, no decisions have been rendered yet by the Board.